CLAIMS: What is claimed is:

1. Apparatus for collecting and converting radiant energy comprising:

a plurality of spaced apart, incorporated in at least one array elongated reflective surfaces, each said reflective surface extending between front and rear opposing longitudinal ends and having a generally concave transversal profile;

an elongated energy receiving means disposed in energy receiving relation to each of said reflective surfaces;

wherein said reflective surfaces are located at a plurality of predetermined distances from said energy receiving means, the longitudinal axes of said reflective surfaces being generally parallel to each other and to said energy receiving means, a plurality of said rear ends of at least a part of said reflective surfaces facing said energy receiving means, and the rear end portions of said reflective surfaces being generally inclined towards one another;

wherein at least a substantial portion of said radiant energy impinging on said reflective surfaces is concentrated and directed toward a plurality of predetermined converging directions so that the concentrated fluxes reflected from said reflective surfaces are at least partially superimposed on said energy receiving means and received and converted by said energy receiving means;

whereby said reflective surfaces can be adapted to provide lens-like operation with high energy concentration and desired irradiance distribution on said energy receiving means.

2. The apparatus of claim 1 wherein the slopes of said mirrored surfaces are defined so that angles of incidence α of said radiant energy on said mirrored surfaces have particular values more than 45° and less than 90°.

3. The apparatus of claim 1 wherein said mirrored surfaces are designed and positioned to minimize screening and shadowing on other said mirrored surfaces.

4. The apparatus of claim 1 further comprising one or more planar mirrored surfaces for directing said radiant energy toward said energy receiving means.

5. The apparatus of claim 1 wherein at least one of said transversal profiles is a segment of conical section curve.

6. The apparatus of claim 5 wherein said segment is parabolic.

7. The apparatus of claim 5 wherein said segment is circular.

8. The apparatus of claim 1 wherein at least one of said transversal profiles is a segment of a curve represented by a polynomial function of at least second order.

9. The apparatus of claim 1 wherein at least one of said transversal profiles is a segment of a parametric curve or spline tailored to provide a desired illumination of said energy receiving means.

10. The apparatus of claim 1 wherein at least one of said transversal profiles comprises a set of conjugated lines selected from the group consisting of straight, parabolic, circular, elliptical, and hyperbolic segments.

11. The apparatus of claim 1 wherein said energy receiving means is positioned according to a relation: $\beta < 90°$ where β is an angle between the direction to source of said radiant energy and direction to a point at said mirrored surfaces taken at a point of the energy receiving surface of said energy receiving means.

12. The apparatus of claim 1 wherein said energy receiving means comprises at least one photovoltaic cell having working area facing toward said mirrored surfaces and the source of said radiant energy.

13. The apparatus of claim 12 further comprising at least one heat sink which is in heat exchange relation with said photovoltaic cell.

14. The apparatus of claim 1 wherein said energy receiving means comprises at least one tubular absorber of a solar heat collector.

15. The apparatus of claim 1 wherein said energy receiving means is mechanically separated from said mirrored surfaces.

16. The apparatus of claim 1 wherein one or more said mirrored surfaces is disposed in any one of a translated, a reversed and/or a rotated orientation relative to the others having the same basic arrangement.

17. The apparatus of claim 1 further comprising at least one axle support means for positioning said at least one array of said mirrored surfaces according to the movement of source of said radiant energy.